APPENDIX B

AIR QUALITY BACKGROUND INFORMATION

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REGULATORY SETTING

FEDERAL

The National Ambient Air Quality Standards (NAAQS) have been established for carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10}), and lead (Pb) (see Table B-1). These contaminants are referred to as criteria pollutants. Areas are classified under the federal Clean Air Act (CAA) as either "attainment" or "non-attainment" areas for each criteria pollutant based on whether the NAAQS have been achieved or not. The SCAB is designated as a non-attainment area for O_3, CO, and PM_{10}. The South Coast Air Basin (SCAB) is designated as an attainment area for SO_2 and lead, and a maintenance area for NO_2.

In addition to criteria pollutants, the Environmental Protection Agency (EPA) is concerned with Hazardous Air Pollutants (HAPs), which are substances with the potential to cause or contribute to an increase in mortality or an increase in serious illness, or may pose a present or potential hazard to human health. Title III of the 1990 Federal Clean Air Act Amendment (FCAAA) identified 189 HAPs. Control of toxic air emissions is implemented under Section 112 (HAPs) of the FCAAA. Implementation of the NAAQS to control criteria pollutants has also resulted in the reduction of toxic air contaminants.

STATE STANDARDS

In 1967, California's legislature passed the Mulford-Carrel Act, which established the California Air Resources Board (CARB). The CARB sets state air quality standards for criteria pollutants. The state standards for these pollutants are more stringent than the corresponding federal standards. As in the federal CAA, the California CAA classifies areas as either being in attainment or non-attainment for these criteria pollutants. Areas designated as non-attainment are then given a time frame to achieve attainment.

To control HAPs and Toxic Air Contaminants (TAC), the California legislature has adopted several state bills. A more thorough description of HAP and TAC regulations can be found in the Hazards Section of this document.

LOCAL REGULATIONS

The PDR and MDR lots are is located within the jurisdiction of the South Coast Air Quality Management District (SCAQMD), which adopted an Air Quality Management Plan (AQMP) in 1979, which has been revised and amended several times. Currently, the SCAQMD is operating under the 1997 AQMP and the

TABLE B-1
AMBIENT AIR QUALITY STANDARDS FOR CRITICAL POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	0.12 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Motor vehicles.
	8 hours	---	0.08 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, CO interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9 ppm	9.0 ppm		
Nitrogen Dioxide (NO_2)	Annual Average	---	0.05 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.25 ppm	---		
	1 hour	0.25 ppm	---		
	24 hours	0.04 ppm	0.14 ppm		
Suspended Particulate Matter (PM-10 , PM-2.5)	Annual Geometric Mean	30 ug/m^3 (PM_{10})	65 ug/m^3 ($PM_{2.5}$)	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	---	50 ug/m^3 (PM_{10})		
	24 hours	50 ug/m^3 (PM_{10})	150 ug/m^3 (PM_{10}) 15 ug/m^3 ($PM_{2.5}$)		
Lead	Monthly	1.5 ug/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases).	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 ug/m^3		

SOURCE: California Air Resources Board, *Ambient Air Quality Standards*, January 25, 1999.

1999 amendment to the 1997 ozone portion of the AQMP. The SCAQMD is in the process of preparing the proposed 2003 Air Quality Management Plan (AQMP) for the South Coast Air Basin. The 2003 AQMP seeks to demonstrate attainment with state and federal air quality standards and will incorporate a revised emissions inventory, the latest modeling techniques, and updated control measures remaining from the 1997/1999 State Implementation Plan and new control measures based on current technology assessments.

The SCAQMD regulates air pollutants in the SCAB through the promulgation of rules and regulations and through the issuance of permits to operate to local industry. Permits establish conditions on specific pieces of equipment and on industrial processes. Currently, the nearby SCG Playa del Rey Gas Storage Facility (PDRGSF) has ten permitted pieces of equipment and is operating under 35 different SCAQMD regulations. None of the permitted or regulated sources are located on or adjacent to the lots included in the scope of this Initial Study.

ANTICIPATED EFFECTS ON PROJECT OPERATION

Originally, the wells and associated lots described in this document were used or could have been used for monitoring of gases and liquids in the storage zones (6000 ft below ground surface) and may be developed for later use if needed for the gas storage system. At present, the lots provide no useful or commercially viable contribution to the operations and maintenance of the PDRGSF. SCG's remaining wells and facilities are adequate for continued operations of the gas storage facility following the proposed sale of the 36 lots.

CRITERIA POLLUTANTS

OZONE (O_3)

The most pervasive air quality problem in the air basin is high O_3 concentrations. Ozone is not emitted directly, but is a secondary pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic compounds (ROC) and nitrogen oxides (NO_X). Significant O_3 production generally requires about three hours in a stable atmosphere with strong sunlight. Ozone is a regional air pollutant because it is transported and diffused by wind concurrent with the photochemical reaction process. Motor vehicles are the major source of ozone precursors in the basin. During late spring, summer and early fall, light winds, low mixing heights, and abundant sunshine combine to produce conditions favorable for maximum production of O_3. Ozone causes eye and respiratory irritation, reduces resistance to lung infection, and may aggravate pulmonary conditions in persons with lung disease. Ozone is also damaging to vegetation and untreated rubber.

CARBON MONOXIDE (CO)

Carbon Monoxide is a non-reactive pollutant emitted primarily by motor vehicles. Ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. When strong surface inversions formed on winter nights are coupled with near-calm winds, CO from automobile exhaust becomes concentrated. The highest CO levels within the Basin are almost always measured during the winter. Carbon Monoxide interferes with the transfer of oxygen to the blood. It may cause dizziness and fatigue and can impair central nervous system functions. The one-hour CO standard has not been exceeded at the closest Monitoring Station in the last five years.

NITROGEN DIOXIDE (NO_2)

There are two oxides of nitrogen which are important in air pollution: Nitric Oxide (NO) and NO_2. Nitric oxide, along with some NO_2, is emitted from motor vehicle engines, power plants, refineries, industrial boilers, ships, aircraft, and railroads. Nitrogen dioxide is primarily formed when NO reacts with atmospheric oxygen in the presence of ROC and sunlight; the other product of this reaction is ozone. Nitrogen dioxide is the whiskey brown colored gas, more commonly known as smog, readily observed during periods of heavy air pollution. Concentrations of NO_2 are highest during the late fall and winter. Nitrogen dioxide increases damage from respiratory disease and irritation, and may reduce resistance to certain infections. The state standard for NO_2 has not been exceeded in the last five years in the project area.

PARTICULATE MATTER

PM-10 and PM-2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM-10 and PM-2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

The primary sources of PM-10 emissions in the project area are mainly from urban sources, dust suspended by vehicle traffic and entrained road dust, and secondary aerosols formed by reactions in the atmosphere. Traffic generates particulate matter and PM-10 emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM-10 is also emitted by burning wood in residential wood stoves and fireplaces. Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants. PM-10 standards have been exceeded on an average of 6.8 days per year in the project area between 1997 and 2001.

TOXIC AIR CONTAMINANTS (TACS)

Toxic Air Contaminants (TACs) are pollutants known or suspected to cause cancer or other serious health effects such as birth defects. TACs may also have significant adverse environmental and ecological effects. Examples of TACs include benzene, diesel particulate, hydrogen sulfide, methylchloride, 1,1,1-trichloroethane, toluene, and metals such as cadmium, mercury, chromium, and lead. Health effects from TACs vary depending on the specific toxic pollutant but may include cancer, immune system damage, as well as neurological, reproductive, developmental, and respiratory problems.

According to the EPA, approximately 50% of the TACs we are exposed to come from mobile source emissions. The EPA and the CARB are both concerned over diesel particulate matter emissions. The

EPA has published its final rule to control emissions of hazardous air pollutants from mobile sources, in the March 29, 2001 Federal Register. The CARB approved a comprehensive diesel risk reduction plan in September 2000. Health risks associated with TACs will be summarized in the Hazard Section of this Initial Study.

HYDROGEN SULFIDE (H_2S)

Hydrogen Sulfide is a colorless, flammable gas with a distinctive "rotten egg" odor. Anaerobic decay processes involving sulfur-bearing materials may create H2S naturally. Natural decay as an H_2S source, however, is quite limited. Most commonly, H_2S is released from petroleum resource operations when underground natural gas contains a substantial fraction of H_2S. Whereas the cap rock over underground accumulations of such gas within various Los Angeles Basin oilfields is generally impermeable, compromise of that cap layer has occurred through petroleum extraction from wells drilled through the cap. Although abandoned wells are sealed to minimize future leakage of H_2S-bearing gas, some wells may leak with passing time.

The SCAQMD has recorded 60 odor complaints since 1988 linked directly to the PDRGSF[9]. In addition, several wells in the Ballona Wetlands and Marina del Rey area have been reported as "leaking" by various citizens and agencies.

In January 2001, Giroux & Associates performed a screening level monitoring for H_2S. Utilizing passive sampling badges, 100 air samples were taken over a five-day period. Giroux & Associates analysis concludes that except near storm drains, there was minimal indication of any H_2S. The analysis further stated that it is unknown if this observed material was due to biogenic decay within a large adjacent storm drain, due to a leaking well, or due to any Southern California Gas (SCG) operations. Due to the uncertainty of this screening level monitoring, a more comprehensive H_2S monitoring program is currently being undertaken in support of analysis this proposed project. Results from this detailed monitoring will be reported in an EIR.

METHANE

Methane is a colorless, odorless, flammable gas, which is the main constituent of natural gas. In the past the migration of methane in the form of natural gas to surface areas has resulted in fires and explosions. Some studies have hypothesized that natural gas can migrate up through abandoned well heads.[10] Due to these concerns, methane migration monitoring was conducted at representative well sites located on the bluff at Playa del Rey (Lor Mar), and at the Troxel well (Cluster 12) in Marina del Rey. Giroux & Associates conducted monitoring within a cavity created by encasing the subsurface wellhead within a hollow enclosure with surface access. Methane measurements were made with a flame ionization detector for organic gases (Photovac Micro-FID) for a month after equipment installation. Troxel well (Marina del Rey) probe installation encountered pockets of crude oil mixed with sand that apparently spilled when this was an operating oil well. Nothing in the report findings suggested any clear risk of

9 South Coast Air Quality Management District Complaint Summary Report, last dated report 04/18/03.

10 Gas Migration from Oil and Gas Fields and Associated Hazards, Journal of Petroleum Science and Engineering, 9 (1993) 223-238 Department of Civil Engineering, University of Southern California, Gurevich, A.E., Endres, B.l., Robertson, J.O., and Chelingar, G.V.

home construction atop these two well sites. (Giroux & Associates, November 5, 2001) It is not known to what extent these findings can be generalized to all the lots proposed for sale. To this end, an in depth methane migration monitoring study at all twelve lot clusters is presently underway to verify the conclusions reached in the last study and assist in a risk assessment of these properties. The results of this study will be included in an EIR.

ODORS

Though offensive odors rarely cause any physical harm, they are unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed and direction, and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between a receptor and the source (buffer zone) to an acceptable level will mitigate odor impacts. Additional odor monitoring is presently underway and the results will be included in an EIR.